

Severe local hail and wind storms, April, 1924—Continued.

Place	Date	Time	Width of path (yards)	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Mills County, Tex. (eastern part of).	22		4 miles			Heavy hail	Crops destroyed; roof of building damaged; poultry killed.	Official, U. S. Weather Bureau.
Berne, Ind. (near)	22					Tornado	No damage reported	Do.
St. Francisville, La. (near)	23	4:30 p. m.				Heavy hail	Orchards and gardens injured	Do.
Jacksonville, Tex. (tomato belt around).	23		3 miles		50,000-100,000	Hail	Crops destroyed and considerable damage to roofs and window glass.	Do.
Munday, Tex. (near)	24				10,000	Heavy hail	Extensive crop damage.	Do.
Pearl, N. Mex.	24	4:30 p. m.	$\frac{1}{2}$ mile			do.	Some fruit beaten off and minor injury to gardens.	Do.
San Marcial, N. Mex.	24	2:45 p. m.				do.	Fruit severely damaged.	Do.
Stith, Tex. (near)	24-25		5 miles			do.	Crops damaged or destroyed over wide area; path 10 miles long.	Do.
Slick, Okla. (5 miles SE. of)	25	A. m.		3		Tornado	1 home demolished and several persons injured; strip several feet wide and mile long devastated.	Dallas Morning News (Texas).
Benson, Ariz. (7 miles W. of)	25	10:45 a. m.				Heavy hail	Considerable damage.	Official, U. S. Weather Bureau.
Rockville, Ind.	25					Electrical and wind.	Several trees struck and barn burned.	Do.
Buckner, Ky.	25	7-8 p. m.	2 to 3 miles.			Moderately heavy hail.	Crops and buds of fruit trees considerably injured.	Do.
Travis County, Tex. (between Carl and Colton).	26	5 a. m.	50	5	25,000	Tornado	Some property damage; 15 persons injured; path 4 miles long.	Do.
Hondo, Tex. (near)	26					Hail	Fruit knocked off and considerable damage to window glass and roofs.	Do.
Grand Coteau, La. (4 miles NW. of)	28	3 p. m.				Light to heavy hail.	A few cotton fields damaged; minor damage by wind to buildings.	Do.
Ford County and northern parts of Clark, Kiowa, and Meade Counties, Kans.	28		10 miles		1,050	do.	Growing crops injured; some damage to windows.	Do.
Many, La.	29	6:30 p. m.	450-900	1	100,000	Tornado	Many buildings destroyed or damaged; several persons injured.	Do.
Crichton, La.	29	P. m.	60 yards.			do.	Several persons injured; 4 houses destroyed.	Do.
Texarkana, Ark. (N. of)	29	2:30 p. m.	100	1	25,000	do.	Everything in path destroyed; 17 persons injured; path $\frac{1}{2}$ mile long.	Do.
Covington to Ingalls (near Stillwater), Okla.	29	A. m.		1		do.	A number of buildings and 15 oil derricks destroyed; 2 injured.	Tulsa Tribune (Oklahoma).
Columbia, S. C.	30	11:05-11:55 a. m.	3 to 6 miles.	1	60,000	Hail and rain	Damage principally to window panes, skylights, greenhouses, and roofs.	Official, U. S. Weather Bureau.
Autauga County, Ala.	30	2:45 a. m.			30,000	Tornado	2 persons slightly injured.	Do.
Chambers County, Ala. (between Welsh and Roanoke).	30	4:30 a. m.		1	25,000	do.	6 persons injured.	Do.
Butler to Macon Counties, Ala.	30	4:50-6:30 a. m.		8	80,000	do.	30 persons injured; 15 or 20 buildings near Thompson destroyed.	Do.
Lee County, Ala., to Meriwether County, Ga.	30	5-6:15 a. m.		15	60,000	do.	4 deaths in Alabama; 11 in Georgia; greatest loss of life and property in Chipley, Ga.	Do.
Pike and Barbour Counties, Ala.	30	6-7:15 a. m.		1	70,000	do.	Heavy property damage; greatest near Louisville; 27 persons injured in Barbour County alone.	Do.
Lawrenceville, Ga., to Hickory Grove, S. C.	30	6-11 a. m.	100-1,300	10	2,200,000	do.	Heavy property damage; path 185 miles long, 110 of which are in South Carolina; numerous injuries.	Official U. S. Weather Bureau; Piedmont (Greenville, S. C.).
Albany, Ga.	30	7 a. m.			1,000	do.	Damage chiefly to shade trees.	Official, U. S. Weather Bureau.
Brookton to Cornelia, Ga.	30	9-9:35 a. m.			51,000	do.	4 injured at Brookton; damage mostly at Cornelia.	Do.
Reynolds, Ga.	30	8:30 a. m.			30,000	do.	20 people injured.	Do.
Ficklin, Ga.	30	9:30 a. m.		1	25,000	do.	10 injured; village practically destroyed.	Do.
Macon, Ga. (3 miles SW. of)	30	do.	15-300	3	200,000	do.	40 injured; many buildings wrecked or moved off foundations; fruit and forest trees ruined.	Do.
Fitzgerald, Ga.	30	10 a. m.			50,000	do.	3 persons injured.	Do.
Sylvania, Ga.	30	12:45 p. m.			1,000	do.	Minor property damage.	Do.
Butler, Ga.	30				10,000	Light hail and wind.	Damage by wind.	Do.
McRae, Ga.	30				5,000	Heavy hail	Orchards injured.	Do.
Millen, Ga.	30				10,000	do.	Damage principally to crops; some stones 2 inches in diameter.	Do.
Aiken (near) to Pamplico, S. C.	30	11 a. m.-2:45 p. m.	300-1,400	67	1,000,000	Tornado	Heavy property damage; path 130 miles long.	Do.
Pittsboro, N. C. (near)	30	12:30 p. m.	100-300	4	20,000	do.	Path 2 miles long; 5 persons hurt.	Do.
Martin County, N. C.	30	2:30 p. m.	100-300	1	200,000	do.	40 persons injured; 80 buildings damaged or destroyed; 15-mile path.	Do.
Amelia Co., Va.	30	5:30 p. m.	100-300	1	30,000	do.	Path 10 miles long; several persons injured.	Do.
Greensville Co., Va.	30	do.	40		1,000	do.	1 building destroyed; very short path.	Do.

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## STORMS AND WEATHER WARNINGS

## WASHINGTON FORECAST DISTRICT

A disturbance of slight intensity that was over the Carolinas on the morning of the 1st moved northeastward with rapidly increasing intensity and was centered over Maine as a storm of marked energy 24 hours later. Shifting gales occurred generally from Cape Hatteras northward, several stations reporting maximum wind velocities exceeding 50 miles an hour, the highest being 68 miles an hour from the northeast at Atlantic City, N. J. Storm warnings were issued for the area affected well in advance of the occurrence of high winds.

During the night of the 3d-4th a disturbance developed over the northeastern Gulf of Mexico and was centered near Pensacola, Fla., at 8 a. m. of the 4th. At the same

time pressure was abnormally high over the Carolinas and the Middle Atlantic States, so that strong northeast and east winds seemed probable along the Atlantic coast from Savannah northward to Cape Hatteras. Storm warnings were ordered displayed at 10 a. m., but the disturbance gradually dissipated and no winds of gale force occurred.

On the morning of the 6th pressure was abnormally high over the Canadian Maritime Provinces, and a disturbance was moving eastward over the Lake region, with strong evidences of the development of a secondary over the Middle Atlantic States. Accordingly southeast storm warnings were displayed from Delaware Breakwater to Eastport, Me. The secondary disturbance developed during the 6th and moved rapidly northeastward, with a marked increase in intensity, so that strong

east and southeast gales occurred at all stations along the coast from Delaware Breakwater northward. While both Atlantic City and New York City reported a maximum velocity of 64 miles an hour, the velocity of 52 miles an hour from the east at Portland, Me., indicated that the storm was most severe in that locality. Due to the exposure of the anemometer at Portland the maximum wind velocity there seldom reaches 50 miles an hour.

The next disturbance to cause strong winds along the Atlantic coast was that of the 18th-19th, for which storm warnings were displayed along the New England coast the evening of the 18th. Again on the 20th warnings were displayed from Delaware Breakwater to Nantucket, Mass., in connection with a disturbance that moved rapidly eastward from Lake Erie to the southern New England coast.

At 8 p. m. of the 21st a disturbance of considerable energy was over the upper Ohio Valley and the southern Lake region and moving eastward, and southeast storm warnings were issued at 9:30 p. m. for the Atlantic coast from Cape Hatteras northward. These warnings were fully verified, the highest velocity reported being 56 miles an hour from the northwest at New York City.

The last storm warnings of the month were ordered during the afternoon and evening of the 30th from the Virginia Capes to Eastport, Me., in connection with a disturbance of marked intensity that moved rapidly from the lower Ohio Valley to New England. Several stations reported maximum velocities of between 45 and 50 miles an hour from the southeast.

Frost warnings were issued for portions of the South Atlantic and East Gulf States on the 1st and 2d, but no further warnings for the Southeastern States were required during the month, and none for any section until the 17th. During the week beginning on that date warnings were issued for limited areas in the Ohio Valley and the Middle Atlantic States.—*Charles L. Mitchell.*

#### CHICAGO FORECAST DISTRICT

The month, as a whole, was moderately warm and dry in the central and southern portions of the district, and wet and cold from northern Lake Michigan westward and northwestward across the Red River of the North Valley.

Special warnings issued during April were chiefly confined to those in anticipation of frost, but the season was somewhat later than the average, and, in consequence, warnings were not of much importance.

The principal storm of the month appeared beyond the Rockies on the 13th, and gradually developed and moved eastward, the center reaching the Middle Missouri Valley on the 15th, the Middle Mississippi Valley on the 16th, and the northern Lake region on the 17th. Heavy snow accompanied the storm in the Rocky Mountain region and northern Plains, and cold weather followed in its rear, frost being reported on the 18th to the southern limits of the region.

Livestock warnings were sent on the 15th to Nebraska and Wyoming; advices of frost to various points as occasion demanded; also advisory messages to open ports on Lake Michigan for strong shifting winds. The regular season for navigation did not commence until April 20.—*H. J. Cox.*

#### NEW ORLEANS FORECAST DISTRICT

The weather during April, 1924, was marked by several well-defined troughs of low pressure, which generally weakened in passing eastward over this district; but the last trough of the month, passing eastward on the 28th-30th, increased in intensity.

The month opened with cool weather and extensive frosts in the interior sections, but thereafter the areas of high pressure following the troughs did not carry cold weather far southward, frosts being generally limited to the northwestern portion and freezing temperature to the extreme northwestern portion of the district. Ample notice was given for all frosts and freezes and warnings were sent also to stockmen for the freezes that occurred in the Texas Panhandle and northwestern Oklahoma on the 17th and 26th. The dates of frost warnings, which were issued mostly for the northwestern portion of the district and occasionally for northern Arkansas, were the 1st, 9th, 17th, 18th, 26th, 29th, and 30th.

On the morning of the 25th, in the southern end of a long trough of low pressure, a disturbance appeared over the Rio Grande Valley. Southeast storm warnings were issued at 8:30 a. m. for strong southerly winds and squalls on the Texas coast. The wind increased considerably and moderate to fresh gales occurred during the afternoon, though the morning and night weather maps showed only moderate pressure gradient, and the storm diminished in intensity thereafter. There were no storms without warnings. Small craft warnings were advised for the Texas coast on the 15th, 16th, 25th, and 26th.

Fire-weather warnings were sent to addresses in Oklahoma and Arkansas on the 15th and 24th and conditions occurred as forecast.—*R. A. Dyke.*

#### DENVER FORECAST DISTRICT

On the morning of the 15th a pronounced area of low pressure was central over southeastern Wyoming, while the barometer was moderately high and rising over the North Pacific States. Cold wave and livestock warnings were issued for northern and eastern Colorado and northeastern Arizona, and livestock warnings alone for northern New Mexico. The ensuing weather was in full agreement with the warnings.

Another pronounced low-pressure area began crossing the district from the west on the 23d, being followed by high pressure from the northwest, consequently forecasts of rain turning to snow and colder weather were issued for the sections within its influence, timed to accord approximately with the pressure movements. Pressure gradients intensified during the day and night sufficient to produce a cold wave in northeastern Colorado.

Another disturbance, which manifested but little energy in crossing the district, developed marked energy by the morning of the 29th over southern Kansas and Oklahoma, while a high was building up to the northwest, consequently livestock warnings were issued for eastern Colorado for colder weather, with snow. The ensuing fall in temperature was comparatively small and precipitation was mostly rain on the lower ranges, but snow on the more elevated ones.

Frosts and temperatures near or below freezing were of very frequent occurrence during the month, and the number of warnings to interested districts was correspondingly great.

Warnings were already being issued at the beginning of the month for the fruit districts in which protective measures are taken in southern New Mexico, and fruit advanced so as to become susceptible to injury by April 9th in southeastern Colorado, by the 12th in the Colorado Valley in Colorado, and about the 29th in the Gunnison Valley in Colorado.

Warnings of expected frosts of a less serious character were issued as follows:

For all of southern New Mexico on the 16th, 17th, 25th, and 26th; for extreme southeastern New Mexico on the